

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as now presently amended, is respectfully requested.

Claims 8, 9, 10, 14, and 18 have been amended. Claims 1-7, 11-13, 15-17, 19, and 20 have been previously canceled. Claims 8, 9, 10, 14, and 18 are active in the application.

Briefly, Applicant's invention is directed to a coarse wave division multiplexer/demultiplexer. Coarse wave division multiplexer/demultiplexers are known in the art. However, known coarse wave division multiplexer/demultiplexers are believed to be constructed of expensive materials and/or parts, are relatively large, and are generally susceptible to vibrations and thermal effects.

In order to solve the above-identified problems, Applicant has invented a device which is relatively inexpensive to produce, is relatively small, and is robust.

Amended Claim 8 generally includes the features of Claim 1 from which it originally depended. Amended Claim 8 includes a housing from which the first I/O waveguide extends, and in which the first single-side-pass filter is mounted. The first single-side-pass filter includes a transparent substrate on which several thin layers of different types of metal have been deposited by a sputtering technique. Such a design is robust. And as originally filed, amended Claim 8 includes the feature of the first single-side-pass filter being a short-pass filter. Such a feature provides for a more economical device, since a low-pass filter is generally less expensive than a band pass filter. Support for the claim amendments are found throughout the specification and claims, and more particularly in paragraph [30].

Amended Claim 9 generally includes the features of Claims 1-5, from which it originally depended. Amended Claim 9 includes a housing from which the first I/O waveguide extends, and in which the first, second, and third single-side-pass filters are mounted. The first single-side-pass filter includes a transparent substrate on which several thin layers of different types of metal have been deposited by a sputtering technique. Such a design is robust. And as originally filed, amended Claim 9 includes the feature of the first, second, and third single-side-pass filters being separated by approximately 25.6 nanometers. Such a feature provides for a more economical device since single-side-pass filters are generally less expensive than band pass filters. Furthermore, the separation of 25.6 nanometers ensure that the device is a coarse wave division multiplexer/demultiplexer and not a dense wave division multiplexer/demultiplexer. Thus, the device, as recited in amended Claim 9, is less susceptible to thermal gradients. As compared to amended Claim 14, amended Claim 9 includes six collimator assemblies. Additionally, for enhanced optical performance, the first GRIN lens includes a transparent material having a cylindrical shape. The cylindrical shape of the first GRIN lens includes a center and an edge. The center of the first GRIN lens has an index of refraction substantially equal to 1.52, and the edge of the first GRIN lens has an index of refraction substantially equal to 1.55. Support for the claim amendments are found throughout the specification and claims, and more particularly in paragraphs [25] and [30].

Amended Claim 10 generally includes the features of Claims 1-5, from which it originally depended. Amended Claim 10 includes a housing from which the first I/O waveguide extends, and in which the first, second, and third single-side-pass filters are mounted. The first single-side-pass filter includes a transparent substrate on which several thin layers of different

types of metal have been deposited by a sputtering technique. Such a design is robust. And as originally filed, amended Claim 10 includes the feature of the first single-side-pass filter having a specified wavelength at approximately 1550.02 nanometers, the second single-side-pass filter having a specified wavelength at approximately 1524.38, and the third single-side-pass filter having a specified wavelength at approximately 1575.62 nanometers. Such a feature provides for a more economical device since single-side-pass filters are generally less expensive than band pass filters. Furthermore, the separation of the specified wavelengths of the single-side-pass filters ensures that the device is a coarse wave division multiplexer/demultiplexer and not a dense wave division multiplexer/demultiplexer. Thus, the device, as recited in amended Claim 10, is less susceptible to thermal gradients. Additionally, for enhanced optical performance, the first GRIN lens includes a transparent material having a cylindrical shape. The cylindrical shape of the first GRIN lens includes a center and an edge. The center of the first GRIN lens has an index of refraction substantially equal to 1.52, and the edge of the first GRIN lens has an index of refraction substantially equal to 1.55. Support for the claim amendments are found throughout the specification and claims, and more particularly in paragraphs [25] and [30].

Amended Claim 14 generally includes the features of Claims 1, 12, and 13, from which it depended. Amended Claim 14 includes a housing from which the first I/O waveguide extends, and in which the first, second, and third single-side-pass filters are mounted. The first single-side-pass filter includes a transparent substrate on which several thin layers of different types of metal have been deposited by a sputtering technique. Such a design is robust. And as originally filed, amended Claim 14 includes the feature of the first, second, and third single-side-pass filters being separated by approximately 25.6 nanometers. Such a feature provides for a more

economical device since single-side-pass filters are generally less expensive than band pass filters. Furthermore, the separation of 25.6 nanometers ensure that the device is a coarse wave division multiplexer/demultiplexer and not a dense wave division multiplexer/demultiplexer. Thus, the device, as recited in amended Claim 14, is less susceptible to thermal gradients. Support for the claim amendments are found throughout the specification and claims, and more particularly in paragraph [30].

Amended Claim 18 generally includes the features of Claim 1 from which it originally depended. Amended Claim 18 includes a housing from which the first I/O waveguide extends, and in which the first single-side-pass filter is mounted. The first single-side-pass filter includes a transparent substrate on which several thin layers of different types of metal have been deposited by a sputtering technique. Such a design is robust. And as originally filed, amended Claim 18 includes the feature of the first single-side-pass filter being curved. Such a feature provides for a more economical device and smaller device since, typically, the curved filter eliminates the need to use expensive and large lenses. Support for the claim amendments are found throughout the specification and claims, and more particularly in paragraph [30].

Claims 8, 9, 10, 14, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pan, et al.

The Pan, et al reference was cited for disclosing most of the features recited in Claims 8, 9, 10, 14, and 18. The Examiner states that the Pan, et al reference is deficient as a reference, in regard to Claims 8, 9, 10, 14, and 18, since “the filter is not disclosed as short pass filter or curved filter and also the specific separation between the adjacent filters or specific wavelengths,” are not disclosed. However, the Examiner is of the opinion that the features

recited in Claims 8, 9, 10, 14, and 18 are obvious in light of Pan, et al. The Examiner has taken the position that these features “would depend on design parameters and are considered as a matter of design choice, and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select ingle pass or curved filters or specific separation distance between single pass filters and specific wavelengths, in order to obtain desired separation of frequencies or channels.”

The concept of a “design choice” implies that such a choice is but one of many equally similarly obvious choices which are substituted for one another so as to provide the desired result. However, the Examiner’s position ignores the fact that Applicant’s claimed features of the single-side-pass filter being a short-pass filter (Claim 8); the first, second, and third single-side-pass filters being separated by specified wavelengths of approximately 25.6 nanometers (Claims 9 and 14); the first single-side-pass filter having a specified wavelength of approximately 1550.02 nanometers, the second single-side-pass filter having a specified wavelength of approximately 1524.38 nanometers, and the third single-side-pass filter having a specified wavelength of approximately 1575.62 nanometers (Claim 10); and the single-side-pass filter having a curved shape (Claim 18) provide the improved results of being a more economical device, a coarse wave division multiplexer/demultiplexer, and a device which is less susceptible to thermal gradients, and a compact device.

In light of the above, it is not credible to assert that the features, listed above in regard to Claims 8, 9, 10, 14, and 18, which provide for the improved results would merely be a design choice applied to the prior art that lacks the claimed improvements. Therefore, the Pan, et al

reference is not believed to in any way anticipate or obviate any of the significant aspects of the present invention as recited in amended Claims 8, 9, 10, 14, and 18.

Additionally, Claims 8, 9, 10, 14, and 18 have been amended so as to include the feature of "the first single-side-pass filter includes a transparent substrate on which several thin layers of different types of metal have been deposited by a sputtering technique." Furthermore, Claims 9, and 10 have been amended so as to include the feature of "the first GRIN lens includes a transparent material having a cylindrical shape, and wherein the cylindrical shape includes a center and an edge, and wherein the first GRIN lens has a first index of refraction substantially equal to 1.52 at the center, and a second index of refraction substantially equal to 1.55 at the edge." Such features are not disclosed in the Pan, et al reference.

The above changes to the claims are self-evident from the original disclosure; thus, no new matter has been introduced, and no new issues have been raised.

In view of the foregoing comments, it is respectfully submitted that the claims are definite and in condition for allowance. An early and favorable action to that effect is therefore respectfully requested.

Respectfully submitted,

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